



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>H04B 7/04</b>		<b>A1</b>	(11) International Publication Number: <b>WO 96/37974</b>
		(43) International Publication Date: 28 November 1996 (28.11.96)	
(21) International Application Number: <b>PCT/FI96/00289</b>		(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 23 May 1996 (23.05.96)			
(30) Priority Data: 952531 24 May 1995 (24.05.95) FI			
(71) Applicant (for all designated States except US): NOKIA TELECOMMUNICATONS OY [FI/FI]; Upseerinkatu 1, FIN-02600 Espoo (FI).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): KESKITALO, Ilkka [FI/FI]; Koskitie 5 A, FIN-90500 Oulu (FI). MUSZYNSKI, Peter [DE/FI]; Lansankuja 5 C, FIN-02630 Espoo (FI). LAIHO-STEFFENS, Jaana [FI/FI]; Männistöntie 4 B 3, FIN-02880 Veikkola (FI).			
(74) Agent: TEKNOLOGIS KOLSTER OY; Oy Kolster AB, Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).			
		Published With international search report. In English translation (filed in Finnish).	

(54) Title: BASE STATION EQUIPMENT, AND A METHOD FOR STEERING AN ANTENNA BEAM

## (57) Abstract

The invention relates to a method for steering an antenna beam, and a base station equipment (100) comprising one or more antenna arrays (500, 700-704, 772-776), one or more channel units (504-508, 738-742) which channel unit comprises means (600-606, 706, 770) for phasing the signal to be transmitted and received by the antenna array (500, 700-704, 772-776) in such a way that the gain from the antenna array is the greatest in the desired direction, and means (616) for distinguishing the connection quality information from the information received from the mobile station (102). In order to improve the spectral efficiency and the connection quality, the channel unit (504-508, 738-742) comprises means (604, 732, 802) for searching for the incoming directions and delays of the received signal components, and means (604, 744, 802) for controlling the phasing means (606, 770) of the opposite transmission direction on the basis of said information and the connection quality information received from the mobile station.

